eMSP NBSR
Emerging Ecosystem-based Maritime Spatial Planning Topics in the North and Baltic Sea Regions

Co-funded by the European Union

Accelerating renewable energy production in the North Sea and Baltic Sea

eMSP NBSR project

co-funded by the European Union

Context

This document focuses on *Sustainable Blue Economy* (SBE) and especially on how we can make it happen by using Marine Spatial Planning (MSP) as a tool. Do we need to start a broader societal discussion? We divided the Sustainable Blue Economy in three components; food, nature and energy. In this document we zoom in on the sustainable energy and especially the possibilities and risks involved of multi-use of wind energy and alternative forms of energy in the North and Baltic Sea. The ideas developed in this document are based on discussions in the community built within the eMSP NBSR project. The project builds several interlinked *Communities of Practices (CoPs)*. The current document is based on the discussions during a fruitful community event in Den Haag on the 30th of November 2022. You will find the program of the day as an annex to this document, as well as a participation list.

AUTHOR

Blue Cluster 2022

CONTRIBUTORS

Nico Buytendijk, Marjoleine Karper (Netherlands Enterprise Agency), Nathalie Scheidegger (Ministry of Agriculture, Nature and Food quality), Marijn Rabaut, Lien Loosvelt, Kinnie De Beule (Blue Cluster),

Participants from the Community of Practice (cfr. Annex 2)

DISCLAIMER

The work described in Building a Community of Practice for sustainable blue economy is supported by the European Maritime and Fisheries Fund of the European Union - through the Grant Agreement number 101035797 – eMSP NBSR - EMFF-MSP-2020, corresponding to the Call EMFF-MSP-2020 (Maritime Spatial Planning).

1. Unlocking the potential of alternative ocean energy

Offshore wind is an established sector which produces clean electricity that might be cheaper than fuel based electricity. However, there is a rapid development of alternative energy sources ongoing for producing green electricity, such as floating offshore wind, wave energy, tidal energy and floating solar. The 2030 climate target plan urges the need to not only scale up the offshore wind industry, but also unlock the potential of alternative forms of ocean energy. Therefore, coexistence between offshore wind installations and other energy technologies will be key enabler in the acceleration in the development and integration of the offshore energy production into broader energy systems. Assuring minimal environmental impacts as a prerequisite. Coexistence between offshore installations and multi-use is also highlighted in the EU Offshore energy strategy, speeding up is key of the Re Power EU strategy. How can we increase energy production while using the same surface area? How can we use MSP as a tool for energy production increase and multi-use in a maripark?

During this CoP we underlined the theme of energy and the issues and opportunities of multi-use with alternative forms of energy, starting from the mature business of wind farms. With a goal of 300 GW of wind energy and 40 GW of ocean energy by 2050, action is key. For floating energy installations, the challenge is to create the optimum environment to accelerate the momentum created in the North Sea and extend experiences to the Baltic Sea. For other types of alternative energy, the challenge is to bring these technologies to market in time.

Reflections from the North Sea

Whereas the currently announced acceleration in offshore wind is an important challenge for the offshore market in itself, we should make sure we unlock as well and in parallel the enormous potential of complementary technologies, like offshore floating solar. Only when we look at the complete energy system, balancing production and consumption, seeking for lowest possible costs while respecting and if possible boosting ecosystem quality, the energy transition can be called a success. Floating offshore solar is a perfect match with offshore wind and solar is coming to the sea anyway. Solar is the real champion when looking at the speed of reducing LCOE (levelized cost of energy) and efficiency of solar cells have the potential to double (as there is no theoretical limit). Although offshore wind is still the cheapest way to realize large MW of renewable energy, solar can be a disruptive technology in the pursuit for diversification, hybridization and electrification of the energy system.

In the short term, solar can be add-on to existing wind farms in order to allow this emerging technology to grow and proof it’s added value in the challenges our society faces today. Integration in existing wind farms has the advantage that a lot of data on the site is already available, other activities are limited and potential synergies in O&M and electrical infrastructure (only 45% is loaded by offshore wind). In the MPVAQUA project Tractebel, Jan De Nul and DEME are developing a proof of concept for offshore floating PV which is modular and includes aquaculture, has a compact floater, high clearance from water and limited water-contact footprint. In a spin-off project EcoMPV the environmental impact of floating solar is studied by RBINS in order to develop adapt monitoring and design. This is a key challenge towards full integration. MPVAQUA should reach the commercial stage (TRL 8-9) by 2026.

Reflections from the Baltic Sea

The demand for electricity generation is immense and we shall use as many resources as we have available. The oceans have untapped offshore renewable energy sources, which in combination, can add value to a wide variety of projects. Through existing case studies in the North and Baltic Sea, the opportunities of combining offshore wind and tourism, of integrating wave power in a new breakwater, and how the power production of wave energy complements that of offshore wind turbines are explored. For example, in Denmark, it was calculated that the capacity of an offshore wind farm can be increased with 20% by integrating wave energy. It allows for a higher utilization of the sea space, sharing the operation and maintenance infrastructure and the grid connection; ultimately allowing for cost reduction. Moreover, wind and wave energy are complementary in terms of energy profile as there is a 10% reduction in the peaks, 10% reduced time of zero production, 20% increase in day-ahead predictability of power production and 10% less variable power output. As such, wave energy can support power-to-X by more constant operation and higher profitability for electrolyze operation.

The UNITED project is implementing the multi-use concept in 5 pilots across the 3 EU Sea Basins to test the viability of the multi-use concept (Belgium, the Netherlands, Germany, Denmark, and Greece). The project has already provided diverse solution on how the development of co-location of different activities in the same marine space could be a viable approach (economically, socially, and environmentally). Namely, the 5 UNITED pilots have reached the operational stage and three of them are located in challenging offshore environments (Netherlands, Belgium, Germany). The review of the pilots' TRL, legal aspects, technical solutions and risks was completed and the pilots are now working on the synchronization of multiple operation and maintenance systems, as well as improvements in current design, safety and infrastructure set-ups for multi-use extensions. For each of the pilots, the economic assessment is compiled as well as the business analysis. The pilots are further investigating profitability, risk and economic sustainability of multi-use developments.

Key challenges for alternative energy

Assuming that the alternative ocean energy production technologies are mature, how can we increase energy production at sea? How should alternative energy production contribute to a complete energy profile? What are the benefits from multi use? It is clear that technologies are location dependent. Even if considered mature, we mustn't forget that the specifications for an efficient production largely depend on the geography. It would be good to map on sea basin level what potential locations are for specific renewable energy, after which you can specify the potential per country. Which member states have what role in SBE, what are their ambitions? How is financing per MS, can funders be launched on EC level? What is the ownership situation per country? In the Baltic Sea much space at sea is privately owned. The benefits of multi-use, or a MariPark, would be that it is developed or managed by a business developer. Maximum profit, maximum efficiency (safety, timing, upscaling) by one owner. Another is option is that profit goes to the public with the public as ambassador of technology (cooperatives).

Wave and solar energy are at a different TRL level which makes the technological challenges a bit different. Floating solar has the advantage that it can benefit from improvements in solar cells for onshore applications, whereas wave energy still has to go through a learning curve to realize upscaling. Specific challenges to the implementation in an offshore environment are related to (i) position of the solar panels above the sea surface, (ii) anchoring systems (transfer from other sectors eg fisheries), (iii) robust design taking into account wave conditions, salt, and (iv) security measures to avoid collisions or damages (ships, anchors, oil and gas infrastructure). The main bottleneck remains grid connection. Increasing capacity and stability of the grid is the primary focus, which comes at a cost (who will pay?), but distribution priorities should be considered as well (first wind?). Probably other technologies for electricity storage such as batteries and electrolysis need to be integrated.

Secondly, social and environmental challenges should be tackled as well. Although offshore developments should be cost-effectively arranged e.g., curtailing wind or solar energy, it should be socially accepted that not all energy produced will or can be used. Principles from land-based systems to deal with this can be transferred to offshore e.g., contracts. Multi-use comes with a risk for other users and needs to be insured either by one owner or a consortium of parties. In addition to corporate agreements, spatial planning has to deal with the complexity of uses and protect cables, beaches, … .Also availability of resources (human, materials, logistics, …) can be a bottleneck for further development.

Concerning laws and regulation a lot is already in place. It is possible to apply for permits, however the fact that renewable energy such as wave, tidal and floating solar are mostly in a developing state. This means techniques and methods are still under development. Applying for permits under these conditions is difficult. Especially because initiators and emerging entrepreneurs often are small with limited access to specific and needed expertise and experience. These initiatives are being supported during their pilot phase, on different locations pre-permitted areas are available for experiments. It is important to note here that in these areas too often not all necessary permits have been arranged for entrepreneurs. There is a great need for scale-up initiatives within pre-arranged and pre-permitted areas with a complete set of needed permits. These scale-up areas should provide space for development in such a way that building a viable business case is really possible. These areas should also ensure a level playing field and prevent monopoly positions of third parties (other than a neutral partie) who can decide what is possible or not.

As a final note, a grid connection is paramount. If this isn't provided in some way all initiatives will be futile because it won't be possible to build a viable business case.

2. From offshore windfarms to multi-use energy parks

The EU strategy on production of renewable energy is ambitious, but sets high standards as the leading principles to realize this production are multiple use of space and low-impact (and preferably positive) on the marine environment. In addition, the rough conditions in the North Sea and Baltic Sea to operate offshore activities come along with high financial risks and insurance issues. Especially for start-ups and SMEs, these non-technological challenges are hard to overcome and slow down the investments in emerging sectors (e.g. floating solar). A framework in which entrepreneurs can operate in a safe and regulated environment where investment or operational costs can be shared among different users would tackle multiple non-technological barriers and stimulate private initiatives in the blue economy.

Let's assume that windparks are mature and established. What would be the issues and opportunities of multi – use within the windparks, within the energy topic, to increase production capacity per surface area. The concept of a MariPark is considered to fit perfectly with sustainable blue economy and should probably, because it will be managed by business developers, be a solution for space scarcity and provide infrastructure, regulations, safety, finances. Therefore, as such is a secured framework for emerging offshore business. A Maripark, or nature-inclusive maritime business park, is a defined area at sea intended for the establishment of sustainable blue economy activities, by creating the necessary (legal, social, economic, ecological) conditions for (new) maritime entrepreneurship in balance with the natural environment. Because of the rough conditions at sea and for logistic reasons, synergy between the various activities and/or entities in the MariPark is explicitly sought. This will make it easier to guarantee safety and reduce costs. Could offshore wind parks be organised as MariParks in the future?

Reflections from the North Sea

Co-use can contribute to creating a world that runs entirely on green energy by helping to create positive impact on ecology, by freeing up space for renewables roll-out, and by creating potential economic opportunities for existing and new North Sea players. Ørsted has effectively made co-use work within its existing windfarms and is committed to contribute to further innovations. Safety and other societal boundaries, such as positive biodiversity impact of projects and subsidy free renewable energy roll-out, should serve as guiding principles when shaping co-use. By making co-use an integral part of site selection, communicating on desired co-use types for a specific site and by allowing for operational negotiations between windfarm operator and co-use partner in an early-stage co-use initiatives and offshore wind can grow hand in hand.

Orsted has already some experience in multi-use focusing on areas that are already used by other parties and come to conditions to agree on the use of space. Example projects are creation of habitat for cod in Borssele (the Netherlands), installation of wind turbines in zones with gas infrastructure and helicopter zones in Walney (Ireland), crab and lobster fishing at Westermost Rough (UK). These projects were approached very ad hoc, but for future projects a more structured approached is needed. The main learnings are: (i) operational safety needs to be guaranteed when co-using a site, (ii) co-use should occur within societal boundaries for offshore wind, and (iii) co-use is most effectively planned when built-in to the design of a wind farm. It is important to aim for a subsidy free business case for multi-use. To be successful, qualitative tenders that are not only based on pricing but reward co-use can be used for development of new farms, whereas for existing farms, the government can facilitate the dialogue between wind farm owners and co-users. When moving from political negotiations to commercial negotiations, dynamics will change in favor of multi-use e.g., commercial agreement between gas company and wind farm to introduce cost compensation measures.

Reflections from the Baltic Sea

Aland is an autonomous region in Finland which is located between the Finnish mainland and Sweden. It is in fact a group of 6757 small islands equaling a total land area of 1554 km². In addition, Aland has jurisdiction over a water area of 11742 km² for which a marine spatial plan was adopted in 2021. It identified areas such as fishing, aquaculture, shipping, nature conservation. Private waters were excluded from the planning process, currently conservation areas are mainly located in these waters. During analysis, areas were identified that were more sparsely used and could be suitable for offshore windfarms. The two northern areas cover 674 km² and the four southern areas cover 333 km². In order to realize the potential of these areas, the Sunnanwind project was initiated by the government of Aland. A study of the northern areas pointed out that 340 windmills can be installed with a total capacity of 4 GW. The windfarms could become an energy island, feeding production to the adjacent markets, but also enabling transmission of other production between the markets through the same connections.

The goal of the Sunnanvind project is to enable the establishment of large-scale offshore wind farms on the northern side of Aland as quick as possible, on market-based principles. Besides economic aspects also social and environmental aspects need to be taken into account. The latter are a responsibility of society as developers themselves will not do that. A particular complexity in the Sunnanvind project is the impact of neighbouring marine spatial plans (Finland and Sweden). The MSPs have designated zones for shipping routes which might be affected by the installation of wind farms. Therefore, Finnish and Swedish rules need to be taken into consideration by the developer in order to transport electricity to other countries. The discussion how these wind parks could accommodate multiple interests such as fishing and aquaculture has not really started but will most likely occur during the planning process, eg piloting. Preferably, the MSP process should have more business dynamic to enhance analysis of economic and societal impacts, and multi-use stipulations could be entered into lease agreements. The biggest challenge is how to co-ordinate the complexity of multi-use at different levels (national, regional, organization, …). Public-private partnerships are assumed to be unrealistic in the near future as companies look from a business perspective, therefore it is more desirable for wind developers and TSO to join forces for co-development.

Priorities for multi-use energy parks

The holy grail is full multi-use within offshore wind farms (either solar or wave). Theoretically 5 times more energy can be produced when using the area of offshore wind. Next steps are the technical integration of alternative forms of energy in wind parks and the grid connection. Adaptive policies and collaboration between government and industry is needed. Multi-use cases with high potential in the North and Baltic Sea need to be mapped and integrated in MSP. If earmarked calls for alternative energy (next to wind) are rolled out on a large scale, logistics will follow. To enable the communication between policy makers and the industry, the ENCORE project has developed a toolbox based on an API matrix.

The aim of the ENCORE project (https://www.energisingcoasts.eu/) is to advance four offshore renewable energy technologies – including a wave energy converter, tidal and river current turbines and offshore floating solar – in a structured and collaborative process, and to develop tools and services to facilitate the commercialization of marine energy innovations, targeting applications for islands, ports, estuaries and integration with wind farms. Project partners work together in applying certification in real world user cases, to reduce risks and increase investor confidence. Learnings from the project are translated into web courses to train anyone pursuing a career in the emerging industry of offshore renewable energy.

A study from TKI Wind already indicated that the potential of offshore solar is higher than expected (up to 55 GW). In order to unlock this potential, we need to develop new tools for marine spatial planning. Now, planning is mainly done at national scale, but moving to regional or municipality scale could be beneficial as these bodies know what information should be integrated or can be used in MSP. Government agencies and developers need to sit together and map risks and develop a roadmap with identification of test sites where new technologies can be tested. First experiments can already by done in existing offshore wind farms. Developing new technologies will no longer be possible when disregarding ecological aspects. Moreover, technology developers could contribute to policy targets on biodiversity. Local effects are there, but spillover effects at regional level are still unknown. Nature can act as a driver for multi-use and emerging technologies if funding mechanisms for positive ecological benefits (eg blue carbon) are in place. In order to move from experimental to commercial scale, operating in offshore wind farms will only be possible if risks can be managed and if multi-use is included as reference in tenders.

Grid connections seem to be essential to realize a MariPark, but it is unclear who is going to pay for the connection. Potentially, green hydrogen can help us to overcome cable problems. Hydrogen will be part of the equation anyhow. There is a need for pilots and funding mechanisms to make it happen. The government has an important role as developer and has to take responsibility to realize multi-use. MSP will be enabler and act as a framework to show ambitions. On the other hand, MSP has to be driven more by business logic and solutions that are viable and socially acceptable should be prioritized.

3. Social acceptance of multi-use

We are facing complex, societal challenges today, which typically include conflicting views, concerns, and interests. We need to act pro-actively to these changes, doing nothing is not an option. However, social acceptance of proposed solution directions will not come naturally. It can only be established if a social innovation process is in place. This is a process of continuously acting and learning together. The principles and ground rules for such a process are: “co-dependency implies care responsibility” and “diversity in opinions is a basic and essential right”. In essence, the social innovation process is geared towards every voice being heard, including from those who hardly have a voice, and stimulating responsible behavior that goes beyond self-interest only. We should be aware that stakeholders have their own limited view on the application, and everyone has its blind spots. Therefore, we need to listen to other persons to pinpoint these blind spots and use their insights to create the whole picture. The stakeholder process doesn’t have to be slow, but starts with acting, followed by learning and reflecting (Is everyone involved? How are they involved?).

Living labs in Sweden

There is an urgent need to radically change the way we think and use the ocean, away from a blue growth-based approach and towards a sustainable blue economy. New forms of stakeholder collaboration are required that combine ideas and expertise in innovative ways, leverage science and technology, and help change the practices of planning, governing and using our seas. LivingLabs is a well-established methodology for dealing with socio-ecological-technological settings but it constitutes a new approach for the complex marine context. In Sweden, LivingLabs in marine basins are planned as part of the proposed C2B2 programme for a sustainable blue economy, including explorations of multi-use platforms and open by design, multi-purpose infrastructure. Stakeholders from the shipping, fisheries and offshore industries will be brought together. Lessons learned are shared based on the implementation of LivingLabs in different geographic, cultural, socio-economic and political settings. A multi-use context changes the group dynamics. In order to create motivation and value for all parties, it is important not to stick to promises and rethink the blue economy based on data-driven and technology-driven approaches.

Reserve areas in Estonia

In the process of MSP in Estonia, suitable areas for wind energy production were identified based on natural circumstances. Areas with overlap in nature protection and national defence were excluded as well as areas that fall into a visual buffer of 11,1 km from the coastline. Although in the final designated zones for offshore wind, only 4,5 % overlapped with fish trawling areas, a clear conflict arose between wind energy and fisheries. Initially, we tried to find synergies between these two uses, but it soon became clear that finding a solution comes down to social acceptability. As a socially acceptable solution, the government decided to set aside into reserve the areas that are overlapping with most intensive trawling areas. In these so called „reserve areas" for offshore wind, commercial activities cannot be exploited until the year 2027. In 2026 it will be analysed in 2026 if these are needed to meet climate targets and after 2027 the government will decide on their use. Main lessons learned from this example are that combined use or multi-use concepts are not applicable when different parties are not open for discussion, that open discussion is sabotaged by trust issues, and concrete numbers or something tangible is needed to find solutions and not to get stuck on feelings.

Key solutions for social acceptance

When it comes to multi-use at sea, especially combining wind energy with other relative new forms of energy, the acceptance of the public cannot be overlooked and handled as a small side issue. Multi-use can be perceived as adding even more activities to an already (over) crowded area, which could potentially be perceived as a negative impact on the environment. To achieve the EU mission of a decrease in carbon emission to be climate neutral by 2050 and to maximise its impact, issues such as public consultation and acceptance should be addressed in the process.

Gaining the acceptance of the public should not be treated lightly. It is a process in itself, and can only be established when the public, or representations of the public, are invited to be part of the process from an early stage, if possible, even from the beginning. Although, often perceived as a difficult balance to achieve, when balancing between speeding up an implementation process as inviting and hearing all stakeholders. This is key to more accepted solutions. it requires an honest investment, however in the long run be more fruitful. Inviting (all) stakeholders to have a say in the process is not enough, time should be invested to honestly listen to each other to obtain an understanding of each other's position and to come to common ground. Not to respond, but to honestly just listen. Care, or at least try to care what the public has to say, and search for shared interest. Key is to be open and transparent about the process and the decision making. Therefore, community of practice (CoP) can be an important tool for sharing knowledge and experience, to increase the learning curve and to provide a platform for all stakeholders to be heard and to enhance equality in the discussion. Since treating all parties equally is important in this process. When searching for social acceptance keep in mind that each individual will have its own narrative based on their own knowledge and experience, therefore each and everyone have their own blind spots. "We do not know, what we do not know". On a last note, do not only invite stakeholders to your meetings, but also actively go out to the public. Visit them and go to them. This can be the a sign of acknowledgment towards them.

4. Conclusions

Combination of offshore renewables allows to increase utilization per square meter of sea space. Wave energy and solar PV offer complementary electricity production to wind power and allow for more reliable energy systems. Combining wave, wind and solar will lower the cost of the energy system. Lowering the CAPEX through shared infrastructures, and lowering the OPEX through shared vessels, O&M and effective maintenance. The holy grail is to realize multi-use within offshore wind farms (either solar or wave). Theoretically 5 times more energy can be produced when using the area of offshore wind. Multi-use can be of benefit to societies, grid operators and developers.

In order to increase alternative offshore energy production, we need political commitment and specific targets to make it happen. There is a need to further clarify the regulatory framework regarding (i) marine spatial planning, (ii) auction systems (combined versus separate) and (iii) environmental impact assessment. Next steps are the technical integration of alternative forms of energy in wind parks and the grid connection. Adaptive policies and collaboration between government and industry is needed. Multi-use cases with high potential in the North and Baltic Sea need to be mapped and integrated in MSP. If earmarked calls for alternative energy (next to wind) are rolled out on a large scale, logistics will follow. Resources should be assessed in an early development stage. Costs and opportunities related to grid connection should be assessed e.g., installing extra cell and cable entrance in wind turbine, optimized cabling, transformer sizing, cooling, etc.

In order to plan co-use effectively in the design stage of a wind farm, clarity is needed for procedures to enter and operate within a wind farm, mechanisms for sharing responsibilities, assuring space available for wind turbines and sharing facilities, equipment and infrastructure. All these aspects should be integrated in either marine spatial planning or tendering procedures. The desired type of co-use should be announced well in advance, and site selection should be based on specific conditions and boundaries. In qualitative tenders should reward co-use initiatives and allow developers to allocate resources to communal challenges and knowledge sharing. Enough attention should be paid to stakeholder management. Lessons learned from earlier experiences point out that combined use or multi-use concepts are not applicable when different parties are not open for discussion, that open discussion is sabotaged by trust issues, and concrete numbers or something tangible is needed to find solutions and not to get stuck on feelings.

Annex 1 - Program

A meeting with the Community of Practices was held at the 30th of November 2022 in Den Haag with 50 participants from the North Sea and Baltic Sea region. The program of the meeting is described below.

10h00 Introduction

Introduction to the eMSP project and ambitions of the learning strand on Sustainable Blue Economy. This CoP meeting is dedicated to alternative offshore energy production with a focus on synergies with offshore wind farms. During the day we will brainstorm on how to implement such multi-use areas, for instance in a MariPark and also tackle social acceptance challenges.

(Blue Cluster, Belgium)

10h30 Part I: alternative ocean energy

10h30	**Plenary presentations**
	North Sea: offshore floating solar as a perfect match to offshore wind (Tine Boon, head of offshore energy department (Tractebel)) Baltic Sea: Synergies and Multi-use in Offshore Renewable Energies: wave energy, offshore wind and tourism (Julia F. Chozas, Power Systems Engineer and Consultant (UNITED))
11h15	Interactive session on issues and opportunities for alternative ocean energy and the state of play and way forward

12h10 Lunch

13h30 Part II: from wind farm to multi-use

13h30	**Plenary presentations**
	North Sea: Perspective on multi-use and co-use of offshore wind farms' – (Jurre Honkoop, Ørsted) Baltic Sea: Planning to make Åland an “energy island” – reflections 622 days after the adaptation of the first Åland maritime spatial plan (Ralf Häggblom, Government of Åland)
14h15	**Interactive session** Cross-border workshop hosted by the Interreg 2 Seas ENCORE project

	- Pitches of pilots for offshore renewable energy; floating solar, wave energy and tidal energy - Panel discussion on offshore renewable energy, multi-use and the route-to market (Peter Scheijgrond, Bluespring/Dutch Energy from Water Association; Ralf Häggblom, Government of Åland, Brigitte Vlaswinkel, Oceans of Energy; Luc Hamilton, Teamwork Technology)

15h10 Coffee break

15h30 Part III: social acceptance of multi-use

15h30	**Plenary presentations**
	North Sea: the challenge of social acceptance of new ideas (Petra de Braal en Hans de Bruin, Hogeschool Zeeland) Baltic Sea: social acceptance of new ideas at sea – new developments in MSP (Uta Wehn, PhD, MSc Adlerbert Visiting Professor of Marine Citizen Science for Sustainable Development, Department of Marine Sciences University of Gothenburg)
16h15	**Interactive session** Baltic Sea: Practical challenges on multi-use of wind energy and fisheries - (Triin Lepland, Skepast &Puhkim) Discussion on creating trust and willingness on multi-use

17h30 Part IV Closing remarks

Annex 2 – Participation list

Name	Surname		Organisation
Tine		Boon	Tractebel
Annica		Brink	Government of Åland
Lisanne		Brummelhuis	Dutch Ministry of Economic affairs & Climate Policy
Nico		Buytendijk	RVO (Netherlands Enterprise Agency)
Kinnie	De	Beule	De Blauwe Cluster vzw
Petra	de	Braal	Solidarity University
Hans	de	Bruin	HZ University of Applied Sciences
Fabio		Carella	Università Iuav di Venezia
Alexander		Cattrysse	IMDC
Alex		Cuadrado	Nordregio
Steven		Dauwe	Flanders Institute for the Sea (vzw)
Sjoerd	van	Dijk	Netherlands Enterprise Agency
Patrycja		Enet	European MSP Platform - MSP Assistance Mechanism of the EU
Julia		Fernandez Chozas	SPOK ApS / Julia F. Chozas, Consulting Engineer
Ralf		Häggblom	Ålands landskapsregering/Government of Åland
Luc		Hamilton	Teamwork Technology BV
Pim	den	Hartog	Deftiq
Claire		Hodson	University of Rhode Island Coastal Resources Center
Dirk		Hoet	University of Gent
Ann		Holm	The Regional Council od Ostrobothnia
Jurre		Honkoop	Orsted
Dirk Jan		Hummel	OWIC Eemshaven
Marjoleine		Karper	Netherlands Enterprise Agency - Ministry of Agriculture, Nature and Food Quality
Ville		Karvinen	Finnish Environment Institute (SYKE)
Benjamin		Lehner	DMEC
Lien		Loosvelt	De Blauwe Cluster
Selene		Mijnlieff	Ministerie van Infrastructuur en Waterstaat
Jan Peter		Oelen	Netherlands Enterprise Agency
Mari		Pohja-Mykrä	Regional Council of Southwest Finland
Heikki		Saarento	Regional Council of Southwest Finland
Anton		Schaap	DMEC

Nathalie		Scheidegger	Ministry of Agriculture, Nature and Food Quality
Peter		Scheijgrond	Bluespring, Dutch Energy from Water Association
Odilia		Schölvinck	Ministry of infrastructure and Water Management
Stijn		Timmers	Deftiq
Riku		Varjopuro	Finnish Environment Institute
Brigitte		Vlaswinkel	oceans of energy
Uta		Wehn	University of Gothenburg
Nicola		Werdt-Lucas	Nordregio
Jacek		Zaucha	Maritime Institute of Gdynia Maritime University
Linda		Zardo	Università Iuav di Venezia
Triin		Lepland	Skepast&Puhkim